

## **Assessing of the competitiveness level in the industry using the correlation analysis on the example of agriculture of the republic of Tatarstan, Russian federation**

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### **Abstract**

© 2015 Svetlana Fanilevna Khasanova and Aigyl Ilshatovna Fazullina. This study presents the results of evaluation of the competitiveness of farmers and the agricultural sector in the region as a whole. Traditional approach of estimating monopolization level uses Herfindahl-Hirshman and Lerner indexes. But this methods not applicable in case of inhomogeneity of product in industry or when firms manufacture different type of products. The evaluation was performed by using the instruments of fuzzy set theory and the correlation analysis. This technique allows us to estimate the degree of monopolization of the industry and its sub-sectors, as well as to hold a comparative analysis and to identify trends of development. Technique consists several steps. Determine the maximum amount of product produced by any company in the sector in the period and the percentage of the volume of production from which the company can be named as leader. Fuzzy numbers of leadership are calculated for each firm's product. If the company produces more than one product, the fuzzy numbers for each product are aggregated into one by using the fuzzy operation "or". Depending on the percentage level in the industry will change and the number of companies that are recognized as leaders. Simulations proved that correlation between percentage level and number of leaders in industry depends on market structure: Monopoly, oligopoly or pure competition. Correlation coefficient tends from -1 for the monopolized industries to 0 for pure competition. We provided computer simulation to calculate the boundaries of correlation coefficient to identify types of market structure. The analysis was held according to the industrial and economic activity of all 509 agricultural enterprises and 13 types of products in Republic Tatarstan of Russian Federation during 2011-2013. The obtained results are comparable with the results of the calculation the Herfindahl-Hirschman index for each product. However, the proposed technique allows us to make a general assessment of industry's competitiveness. The technique has an applied significance in the development of government support measures.

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### **Keywords**

Agriculture, Correlation analysis, Fuzzy sets, Herfindahl-Hirschman, Monopolization rate